

## Claims

What is claimed is:

- 5 1. Apparatus for communicating data packets according to classes of service comprising:
- a service interface for receiving the data packets, the data packets including a differentiated service codepoint field having a plurality of differentiated service codepoint values;
- 10 a differentiated service profile associated with the service interface;
- a plurality of transport interfaces operatively coupled to the service interface, the service interface assigning a first data packet having a first differentiated service codepoint value to a first transport interface according to the differentiated service profile.
- 15 2. The apparatus of claim 1 wherein the service interface assigns a second data packet having a second differentiated service codepoint value to a second transport interface according to the differentiated service profile.
- 20 3. The apparatus of claim 2 further comprising:
- a second service interface;
- a second differentiated service profile operatively coupled to the second service interface, the second service interface operatively coupled to the plurality of transport interfaces, the second service interface assigning a third data packet having a third differentiated service codepoint value to a third transport interface according to the
- 25 second differentiated service profile.
4. The apparatus of claim 3 wherein the second service interface assigns a fourth data packet having a fourth differentiated service codepoint value to the first transport
- 30 interface according to the second differentiated service profile.

5. The apparatus of claim 4 wherein the second service interface assigns a fifth data packet having the first differentiated service codepoint value to the second transport interface according to the differentiated service profile.

5 6. The apparatus of claim 2 wherein the data packets received at the service interface includes a first subset of the data packets having a first class of service and a second subset of the data packets having a second class of service.

7. The apparatus of claim 6 wherein the first transport interface transports the first  
10 subset of data packets having the first class of service.

8. The apparatus of claim 7 wherein the second transport interface transports the second subset of data packets having the second class of service.

15 9. The apparatus of claim 8 wherein the differentiated service profile maps the first differentiated service codepoint value to the first class of service and a first drop precedence and maps the second differentiated service codepoint value to the second class of service and a second drop precedence.

20 10. A method for communicating data packets according to specified qualities of service comprising:

receiving the data packets at a service interface;

assigning classes of service based on differentiated service codepoint values associated with the data packets according to a differentiated service profile;

25 routing packets to transport interfaces associated with the classes of service.

11. The method of claim 10 wherein the step of routing packets further comprises the step of:

routing packets according to destination addresses associated with the packets.

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12. The method of claim 10 further comprising the step of:

receiving at a second service interface the data packets from the transport interfaces.

13. The method of claim 12 further comprising the step of:

5 queuing the data packets in queues at the second service interface, each of the queues associated with a transport interface.

14. The method of claim 12 further comprising the step of:

10 queuing the data packets in queues at the second service interface, wherein the queues are selected according to the classes of service of the data packets.

15. The method of claim 14 further comprising the step of:

communicating the classes of service as information within the data packets.

15 16. The method of claim 14 further comprising the step of:

determining new differentiated service codepoint values based on the classes of service upon receipt of the data packets at the second service interface; and applying the new differentiated service codepoint values to the data packets.

20 17. The method of claim 12 further comprising the step of:

preserving differentiated service codepoint values associated with the packets between the first service interface and the second service interface, inclusive.

25 18. The method of claim 10 wherein each of the transport interfaces is associated with exactly one of the classes of service.

19. Apparatus for communicating data packets according to classes of service comprising:

30 a service interface for carrying the data packets, wherein the data packets have a plurality of the classes of service;

transport interfaces operably coupled to the service interface, the transport interfaces carrying subsets of the data packets wherein the classes of service of the subsets of the data packets carried by the transport interfaces are unique to each of the transport interfaces.

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20. The apparatus of claim 19 wherein the transport interfaces are operably coupled to the service interface in bundles, each bundle having exactly one of the transport interfaces for each of the classes of service.

10 21. The apparatus of claim 19 further comprising:

a differentiated service profile associated with the service interface, the differentiated service profile defining a correspondence of differentiated service codepoint values to the classes of service.

15 22. The apparatus of claim 21 wherein the differentiated service profile further defines the correspondence of the differentiated service codepoint values to the classes of service and to drop precedences.

20 23. The apparatus of claim 21 wherein the transport interfaces are operably coupled to the service interface in bundles, each bundle having one of the transport interfaces for each of the classes of service, and wherein the service interface applies a routing function to select a first bundle of the bundles over which a first data packet of the data packets is to be carried.

25 24. The apparatus of claim 23 wherein the first data packet has a first differentiated service codepoint value of the differentiated service codepoint values, and wherein the service interface uses a differentiated service profile to determine a first class of service of the first data packet based on a first differentiated service codepoint value of the first data packet.

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25. The apparatus of claim 24 wherein the service interface uses the first bundle and the first class of service to select a first transport interface of the first bundle to carry the first data packet.

5 26. A method for communicating data packets according to classes of service comprising the steps of:

carrying data packets having a plurality of the classes of service over a service interface;

10 carrying the data packets over transport interfaces, the transport interfaces carrying subsets of the data packets wherein the classes of service of the subsets of the data packets carried by the transport interfaces are unique to each of the transport interfaces.

27. The method of claim 26 further comprising the step of:

15 organizing the transport interfaces in bundles, each bundle having exactly one of the transport interfaces for each of the classes of service.

28. The method of claim 26 further comprising the step of:

mapping differentiated service codepoint values to the classes of service.

20 29. The method of claim 28 wherein the step of mapping differentiated service codepoint values to the classes of service further comprises the step of:

mapping differentiated service codepoint values to the classes of service and to drop precedences.

25 30. The method of claim 28 wherein the step of mapping differentiated service codepoint values to the classes of service occurs in accordance with a differentiated service profile, wherein one differentiated service profile is associated with each service interface.

30 31. The method of claim 26 further comprising the steps of:

organizing the transport interfaces in bundles, each bundle having one of the transport interfaces for each of the classes of service;

applying a routing function to select a first bundle of the bundles over which a first data packet of the data packets is to be carried.

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32. The method of claim 31 further comprising the step of:

determining a first class of service for the first data packet based on a first differentiated service codepoint value of the first data packet.

10 33. The method of claim 32 further comprising the step of:

selecting a first transport interface of the first bundle to carry the first data packet based on the first bundle and the first class of service.

FOR THE REASON